

JPL, 00HW019
Data Validation Reports
LDC# 8968

Wet Chemistry

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: JPL, 00HW019
Collection Date: July 24, 2002
LDC Report Date: August 29, 2002
Matrix: Water
Parameters: Wet Chemistry
Validation Level: EPA Level IV
Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 02-4025

Sample Identification

MW-5
MW-6
MW-10
MW-5MS
MW-5MSD
MW-10MS
MW-10MSD

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UU Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met with the following exceptions:

| Sample | Analyte | Finding | Criteria | Flag | A or P |
|----------------------------|-------------|--|---|------|--------|
| All samples in SDG 02-4025 | Perchlorate | Initial calibration was not performed at the required frequency. | Initial calibration must be performed every 6 months. | None | P |

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

All sample result verifications were within validation criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

JPL, 00HW019

Wet Chemistry - Data Qualification Summary - SDG 02-4025

| SDG | Sample | Analyte | Flag | A or P | Reason |
|---------|-----------------------|-------------|------|--------|---------------------|
| 02-4025 | MW-5 MW-6 MW-10 | Perchlorate | None | P | Initial calibration |

JPL, 00HW019

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 02-4025

No Sample Data Qualified in this SDG

JPL, 00HW019

Wet Chemistry - Field Blank Data Qualification Summary - SDG 02-4025

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: JPL, 00HW019
Collection Date: July 25, 2002
LDC Report Date: August 29, 2002
Matrix: Water
Parameters: Wet Chemistry
Validation Level: EPA Level IV
Laboratory: Applied P & Ch Laboratory
Sample Delivery Group (SDG): 02-4033

Sample Identification

MW-7
MW-8
MW-7MS
MW-7MSD

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
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- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met with the following exceptions:

| Sample | Analyte | Finding | Criteria | Flag | A or P |
|--------------|-------------|--|---|------|--------|
| MW-7 MW-8 | Perchlorate | Initial calibration was not performed at the required frequency. | Initial calibration must be performed every 6 months. | None | P |

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

All sample result verifications were within validation criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

JPL, 00HW019

Wet Chemistry - Data Qualification Summary - SDG 02-4033

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|---------------|----------------|-------------|---------------|---------------------|
| 02-4033 | MW-7 MW-8 | Perchlorate | None | P | Initial calibration |

JPL, 00HW019

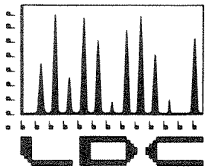
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 02-4033

No Sample Data Qualified in this SDG

JPL, 00HW019

Wet Chemistry - Field Blank Data Qualification Summary - SDG 02-4033

No Sample Data Qualified in this SDG



LABORATORY DATA CONSULTANTS, INC.

7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

SOTA Environmental
16835 W. Bernardo, Drive, Suite 212
San Diego, CA 92127-1813
ATTN: Ms. Yu Zeng

September 3, 2002

SUBJECT: JPL, 00HW019, Data Validation

Dear Ms. Zeng,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on August 26, 2002. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 8987:

| <u>SDG #</u> | <u>Fraction</u> |
|---------------------|--------------------------|
| 02-3990 | Volatiles, Wet Chemistry |

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February 1994
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Richard M. Amano
President/Principal Chemist

LDC #8987 (Sota Environmental-San Diego / JPL, 00HW019)

Shaded cells indicate Level IV validation (all other cells are Level III validation)

JPL, 00HW019
Data Validation Reports
LDC# 8987

Volatiles

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: JPL, 00HW019
Collection Date: July 23, 2002
LDC Report Date: August 30, 2002
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level IV
Laboratory: Applied P & Ch Laboratory
Sample Delivery Group (SDG): 02-3990

Sample Identification

MW-13
MW-16
MW-13D
TB-14

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

| Method Blank ID | Analysis Date | Compound TIC (RT in minutes) | Concentration | Associated Samples |
|-----------------|---------------|---------------------------------|---------------|----------------------------|
| 02G3255MB | 7/24/02 | Methylene chloride | 0.5 ug/L | All samples in SDG 02-3990 |

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

| Sample | Compound TIC (RT in minutes) | Reported Concentration | Modified Final Concentration |
|--------|---------------------------------|---------------------------|---------------------------------|
| MW-13 | Methylene chloride | 1.9 ug/L | 4.9U ug/L |
| MW-16 | Methylene chloride | 3.6 ug/L | 3.6U ug/L |
| MW-13D | Methylene chloride | 3.6 ug/L | 3.6U ug/L |
| TB-14 | Methylene chloride | 4.7 ug/L | 4.7U ug/L |

Sample TB-14 was identified as a trip blank. No volatile contaminants were found in this blank with the following exceptions:

| Trip Blank ID | Sampling Date | Compound | Concentration | Associated Samples |
|---------------|------------------|--------------------|---------------|--------------------------|
| TB-14 | 7/23/02 | Methylene chloride | 4.7 ug/L | MW-13 MW-16 MW-13D |

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater ($>10X$ for common contaminants, $>5X$ for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

| Sample | Compound | Reported Concentration | Modified Final Concentration |
|--------|--------------------|---------------------------|---------------------------------|
| MW-13 | Methylene chloride | 4.9 ug/L | 4.9U ug/L |
| MW-16 | Methylene chloride | 3.6 ug/L | 3.6U ug/L |
| MW-13D | Methylene chloride | 3.6 ug/L | 3.6U ug/L |

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples MW-13 and MW-13D were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

| Compound | Concentration (ug/L) | | RPD |
|----------------------|----------------------|--------|-----|
| | MW-13 | MW-13D | |
| Carbon tetrachloride | 1.2 | 1.3 | 8 |
| Chloroform | 0.7 | 0.8 | 13 |
| Methylene chloride | 4.9 | 3.6 | 31 |

| Compound | Concentration (ug/L) | | RPD |
|-----------------|----------------------|--------|-----|
| | MW-13 | MW-13D | |
| Trichloroethene | 2.1 | 2.1 | 0 |

JPL, 00HW019

Volatiles - Data Qualification Summary - SDG 02-3990

No Sample Data Qualified in this SDG

JPL, 00HW019

Volatiles - Laboratory Blank Data Qualification Summary - SDG 02-3990

| SDG | Sample | Compound TIC (RT in minutes) | Modified Final Concentration | A or P |
|---------|--------|---------------------------------|---------------------------------|--------|
| 02-3990 | MW-13 | Methylene chloride | 4.9U ug/L | A |
| 02-3990 | MW-16 | Methylene chloride | 3.6U ug/L | A |
| 02-3990 | MW-13D | Methylene chloride | 3.6U ug/L | A |
| 02-3990 | TB-14 | Methylene chloride | 4.7U ug/L | A |

JPL, 00HW019

Volatiles - Field Blank Data Qualification Summary - SDG 02-3990

| SDG | Sample | Compound | Modified Final Concentration | A or P |
|---------|--------|--------------------|---------------------------------|--------|
| 02-3990 | MW-13 | Methylene chloride | 4.9U ug/L | A |
| 02-3990 | MW-16 | Methylene chloride | 3.6U ug/L | A |
| 02-3990 | MW-13D | Methylene chloride | 3.6U ug/L | A |

JPL, 00HW019
Data Validation Reports
LDC# 8987

Wet Chemistry

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: JPL, 00HW019
Collection Date: July 23, 2002
LDC Report Date: August 30, 2002
Matrix: Water
Parameters: Wet Chemistry
Validation Level: EPA Level IV
Laboratory: Applied P & Ch Laboratory
Sample Delivery Group (SDG): 02-3990

Sample Identification

MW-13
MW-16
MW-13D
MW-13MS
MW-13MSD

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

The following are definitions of the data qualifiers:

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- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met with the following exceptions:

| Sample | Analyte | Finding | Criteria | Flag | A or P |
|----------------------------|-------------|--|---|------|--------|
| All samples in SDG 02-3990 | Perchlorate | Initial calibration was not performed at the required frequency. | Initial calibration must be performed every 6 months. | None | P |

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

All sample result verifications were within validation criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples MW-13 and MW-13D were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

| Analyte | Concentration | | RPD |
|---------------------|---------------|------------|-----|
| | MW-13 | MW-13D | |
| Hexavalent chromium | 0.010 mg/L | 0.010 mg/L | 0 |
| Perchlorate | 206 ug/L | 205 ug/L | 0 |

JPL, 00HW019

Wet Chemistry - Data Qualification Summary - SDG 02-3990

| SDG | Sample | Analyte | Flag | A or P | Reason |
|---------|--------------------------|-------------|------|--------|---------------------|
| 02-3990 | MW-13 MW-16 MW-13D | Perchlorate | None | P | Initial calibration |

JPL, 00HW019

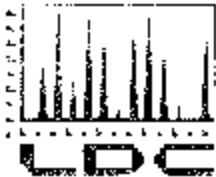
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 02-3990

No Sample Data Qualified in this SDG

JPL, 00HW019

Wet Chemistry - Field Blank Data Qualification Summary - SDG 02-3990

No Sample Data Qualified in this SDG



LABORATORY DATA CONSULTANTS, INC.

7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

SOTA Environmental
16835 W. Bernardo, Drive, Suite 212
San Diego, CA 92127-1813
ATTN: Ms. Yu Zeng

September 25, 2002

SUBJECT: JPL, OCHW019, Data Validation

Dear Ms. Zeng,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on September 20, 2002. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 9106:

| <u>SDG #</u> | <u>Fraction</u> |
|------------------------------|------------------------|
| 02-4084, 02-3887, 02-3799 | Chromium |

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February 1994
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update I, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Stacey A. Mavrakos
Operations Manager/Senior Chemist

LPC #9106 (Sota Environmental-San Diego / JPL 00HW019)

Shaded cells indicate Level IV validation (all other cells are Level III validation)

JPL, 00HW019
Data Validation Reports
LDC# 9106

Chromium

LDC

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: JPL, 00HW019
Collection Date: July 18 through July 24, 2002
LDC Report Date: September 26, 2002
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level IV
Laboratory: BSK Analytical Laboratories

Sample Delivery Group (SDG): 02-4084

Sample Identification

| | |
|---------|----------|
| ER-4 | MW-24-1 |
| ER-23 | MW-24-2 |
| ER-24 | MW-24-3 |
| MW-5 | MW-24-4 |
| MW-6 | ER-23MS |
| MW-7 | ER-23MSD |
| MW-8 | MW-7MS |
| MW-10 | MW-7MSD |
| MW-13 | |
| MW-16 | |
| MW-4-1 | |
| MW-4-2 | |
| MW-4-3 | |
| MW-4-4 | |
| MW-4-5 | |
| MW-13D | |
| MW-23-1 | |
| MW-23-2 | |
| MW-23-3 | |
| MW-23-4 | |

Introduction

This data review covers 28 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UU Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks.

Samples ER-4, ER-23 and ER-24 were identified as equipment rinsates. No chromium contaminants were found in these blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP interference check sample analysis was not required by the method.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standard (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution was not required by the method.

XI. Sample Result Verification

All sample result verifications met validation criteria.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

Samples MW-13 and MW-13D were identified as field duplicates. No chromium contaminants were detected in any of the samples with the following exceptions:

| Analyte | Concentration (ug/L) | | RPD |
|----------|----------------------|--------|-----|
| | MW-13 | MW-13D | |
| Chromium | 28 | 28 | 0 |

JPL, 00HW019

Chromium - Data Qualification Summary - SDG 02-4084

No Sample Data Qualified in this SDG

JPL, 00HW019

Chromium - Laboratory Blank Data Qualification Summary - SDG 02-4084

No Sample Data Qualified in this SDG

JPL, 00HW019

Chromium - Field Blank Data Qualification Summary - SDG 02-4084

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: JPL, 00HW019
Collection Date: July 12 through July 17, 2002
LDC Report Date: September 25, 2002
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level IV
Laboratory: BSK Analytical Laboratories

Sample Delivery Group (SDG): 02-3887

Sample Identification

| | |
|------------|------------|
| ER-3 | MW-11-3MS |
| ER-11 | MW-11-3MSD |
| ER-14 | |
| ER-22 | |
| MW-3-2 | |
| MW-3-3 | |
| MW-3-4 | |
| MW-3-4D | |
| MW-11-1 | |
| MW-11-2 | |
| MW-11-3 | |
| MW-14-1 | |
| MW-14-2 | |
| MW-14-3 | |
| MW-14-4 | |
| MW-14-4D | |
| MW-22-1 | |
| MW-22-2 | |
| MW-11-1MS | |
| MW-11-1MSD | |

Introduction

This data review covers 22 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

The following are definitions of the data qualifiers:

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- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks.

Samples ER-3, ER-11, ER-14 and ER-22 were identified as equipment rinsates. No chromium contaminants were found in these blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP interference check sample analysis was not required by the method.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standard (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution was not required by the method.

XI. Sample Result Verification

All sample result verifications met validation criteria.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

Samples MW-3-4 and MW-3-4D and samples MW-14-4 and MW-14-4D were identified as field duplicates. No chromium contaminants were detected in any of the samples with the following exceptions:

| Analyte | Concentration (ug/L) | | RPD |
|----------|----------------------|---------|-----|
| | MW-3-4 | MW-3-4D | |
| Chromium | 4.0 | 4.0 | 0 |

| Analyte | Concentration (ug/L) | | RPD |
|----------|----------------------|----------|-----|
| | MW-14-4 | MW-14-4D | |
| Chromium | 8.0 | 7.0 | 13 |

JPL, 00HW019

Chromium - Data Qualification Summary - SDG 02-3887

No Sample Data Qualified in this SDG

JPL, 00HW019

Chromium - Laboratory Blank Data Qualification Summary - SDG 02-3887

No Sample Data Qualified in this SDG

JPL, 00HW019

Chromium - Field Blank Data Qualification Summary - SDG 02-3887

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: JPL, 00HW019
Collection Date: July 3 through July 11, 2002
LDC Report Date: September 25, 2002
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level IV
Laboratory: BSK Analytical Laboratories

Sample Delivery Group (SDG): 02-3799

Sample Identification

| | |
|----------|------------|
| ER-12 | MW-17-4MS |
| ER-17 | MW-17-4MSD |
| ER-18 | |
| ER-20 | |
| MW-12-1 | |
| MW-12-2 | |
| MW-12-3 | |
| MW-12-3D | |
| MW-17-2 | |
| MW-17-3 | |
| MW-17-4 | |
| MW-18-2 | |
| MW-18-3 | |
| MW-18-4 | |
| MW-20-1 | |
| MW-20-2 | |
| MW-20-3 | |
| MW-20-4 | |
| MW-20-5 | |
| MW-20-4D | |

Introduction

This data review covers 22 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UU Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks.

Samples ER-4, ER-23 and ER-24 were identified as equipment rinsates. No chromium contaminants were found in these blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP interference check sample analysis was not required by the method.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standard (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution was not required by the method.

XI. Sample Result Verification

All sample result verifications met validation criteria.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

Samples MW-12-3 and MW-12-3D and samples MW-20-4 and MW-20-4D were identified as field duplicates. No chromium contaminants were detected in any of the samples with the following exceptions:

| Analyte | Concentration (ug/L) | | RPD |
|----------|----------------------|----------|-----|
| | MW-12-3 | MW-12-3D | |
| Chromium | 2.0 | 4.0 | 67 |

| Analyte | Concentration (ug/L) | | RPD |
|----------|----------------------|----------|-----|
| | MW-20-4 | MW-20-4D | |
| Chromium | 3.0 | 3.0 | 0 |

JPL, 00HW019

Chromium - Data Qualification Summary - SDG 02-3799

No Sample Data Qualified in this SDG

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Chromium - Laboratory Blank Data Qualification Summary - SDG 02-3799

No Sample Data Qualified in this SDG

JPL, 00HW019

Chromium - Field Blank Data Qualification Summary - SDG 02-3799

No Sample Data Qualified in this SDG